

AMENDMENTS TO THE ABSTRACT

Please amend the Abstract as follows:

~~A quantum cipher communication system is disclosed in which the sender is equipped with a laser light source (1) and a light attenuator (4), the recipient is equipped with a amplifying and voltage measuring device (8). Mirrors (3) and (5) are movable by a distance as small as the wave length of a light to vary the phase of the signal light (S). The light attenuator (4) is used to weaken the intensity of the signal light (S) to an extent as represented by a single photon or so such that a change in its quantum mechanical state is detectable.~~

~~The quantum cipher communication system disclosed is highly useful as a cipher communication system which will make any attempt to wiretap by a third party unsuccessful.~~
provided, that detects a phase difference as a difference signal of an optical balanced homodyne detector, which are imparted by a sender and a recipient between a weak signal light and an intense reference light, wherein the phase difference is assigned to bit 0 or bit 1 by comparing the difference signal with threshold values which are determined from a quantum-mechanical probability distribution of the difference signals obtained from a set of the bit 0 or bit 1 measured by the recipient; and wherein an eavesdropping is detected by the recipient measuring a change in the quantum-mechanical probability distributions of the difference signal, which is produced by the eavesdropping operation.